DOCUMENT RESUME

ED 062 228 SO 002 743

AUTHOR	Dow, Tsung I.
TITLE	The Impact of Chinese Students Returned from America. With Emphasis on the Chinese Revolution, 1911-1949.
INSTITUTION	Florida Atlantic Univ., Boca Raton.
PUB DATE	71
NOTE	60p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Asian History; Chinese Culture; *Cross Cultural Training; *Cultural Exchange; Educational Research; Foreign Students; Higher Education; International Education; *Student Exchange Programs; *Study Abroad

ABSTRACT

This paper traces the development of Chinese students educated in America from 1868 to 1969 and discusses the impact that education had on returning students and the influence that these students exerted on the economic, political, and cultural institutions of China. Before 1949, more Chinese studied in the United States than in Europe or the Soviet Union. Participation of American-trained students in the two revolutions of modern China, however, was far less than that of students educated in and returned from Japan, who carried out the revolution of 1911, or students returned from the Soviet Union, who carried out the revolution of 1949. Participation of American trained students was low because the American system was incompatible with Chinese institutions, and they attempted to revitalize China's declining society by adapting to Westernization. Furthermore, many students sent abroad remained in America where they could not influence change in China or were alienated from the peasant masses. American-trained students made significant contributions by: 1) injecting science and technology into China's culture; 2) introducing the American mass educational system that replaced the old Chinese examination institution; and, 3) maintaining a continuous supply of trained students as the nucleus of China's scientific and engineering man-power. (SJM)

ED 062228

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

The Impact of Chinese Students Returned from America

With emphasis on the Chinese Revolution, 1911-1949

SD 002 743

Tsung I. Dow
Florida Atlantic University

One hundred years ago, the Manchu government of China began to acknowledge the superiority of Western science and technology. On the advice of Yung Wing, the first Chinese graduate from Yale University, the first group of Chinese students was dispatched by the powerful Viceroys, Li Hung-chang and Tseng Kuo-fan to the United States for training. In a letter addressed to Prince Kung, the Regent and head of Tsungli Yamen (Foreign Office), they set the cornerstone of China's policy to educate its youth in the United States. They said that they had discussed "the proposals for the selection of young and brilliant youths to be sent to the schools of various European nations to study military administration, shipping, infantry tactics, mathematics, manufacturing, and other subjects...so that the Chinese can learn thoroughly the new techniques in which the Westerners are particularly strong, and then we can gradually plan for self-strengthening...The treaty recently concluded with the United States (1868) saying that if the Chinese wish to enter the higher and lower levels of American government schools in order to learn various kinds of literature and sciences, they will enjoy equal treatment with the people of the most favored nations." They stated that "for these reasons it should not be a very difficult matter," and concluded that "to establish arsenals for manufacturing and to open schools for instruction in China is

just the beginning of the struggle to rise again. To go abroad for study, to gather ideas and the benefits of greater knowledge can produce far-reaching and great results."[1] Beginning at this time, young Chinese men and women steadily streamed to America from mainland China until 1949.

Before 1949, except for Japan, the number of Chinese students returned from America far outnumbered those returned from Western Europe or elsewhere. From 1905 to 1951 approximately 35,931 students[2] returned from the United States as compared to 10,000 from Western Europe and less than one hundred from the Soviet Union. Yet the participation of American trained students in modern China's two greatest revolutions was far behind that of those students who returned from Japan and the Soviet Union.

The first of these revolutions, the overthrow of the Manchus in 1911, was mainly carried out by those students educated in Japan. The establishment of the People's Republic of China in 1949 was largely accomplished by the students trained in the Soviet Union. In 1911, Sun Yat-sen, the provisional President of the Republic of China, and Wang Ch'un-hui, the Foreign Minister, were the only two members of the provisional government educated in America. The actual power of the provisional government rested in the hands of others such as the Japanese trained War Minister,

Huang Hsin. Among the 34 regional leaders who seized provincial governments and served as provincial governors, 14 were trained in Japanese military schools and another 14 were degree holders in China. None of the 34 had ever visited America.[3]

During the period of the Nationalist ascendancy, from 1928 to 1949, Chinese students returned from America made up half of the entrees (except in the military field) in China's Who's Who, surpassing even those who returned from Japan.[4] However, "the vogue of visiting America in the 1940's," from 1,059 in 1942 to 3,914 in 1949,[5] was, as C. K. Wang lamented in his Chinese Intellectuals and the West, "reminiscent of the Chinese exodus to Japan in 1905 and 1906, that in both cases the Chinese Government in power soon met its downfall."[6]

Following the birth of the People's Republic of China in 1949, Jao Shu-shih was reported to be the only member of the all-powerful 7th Central Committee of the Chinese Communist Party who had spent a few years in the United States before visiting the Soviet Union in 1952.[7] Beside Jao, five others, who were at one time or another members of the Central Committee, also visited the United States. They are Tung Pi-wu, Chang Wen-tien, Lu Ting-i, and Chang Han-fu and Wu Hsiu-chuan.[8] But the first four also graduated from the Sun Yat-sen University at Moscow; the last one graduated

from the Red Army Military Academy. Actually, the visit of Tung Pi-wu and Wu Hsiu-chuan to the United States was insignificant. Tung attended the San Francisco Conference of the United Nations in 1945. Wu and his colleague, Chiao Kuan-hua (the present head of the Chinese delegation), were restricted to a New York hotel while he presented China's case to the United Nations at the height of the Korean War. In 1954, Jao Shu-shih was purged. During the Cultural Revolution, four of the other five lost their only membership to the 8th Central Committee, leaving only Tung Pi-wu, who retained his position. None of the past provincial Governors, nor present Chairmen of the Provincial Revolutionary Committees had ever set foot on American soil. Of the many State Council Ministers and Ambassadors, only four spent any time in America. After fifteen years, in 1969, two full-fledged Chinese students returned from America were admitted to the membership of the 9th Central Committee. They are Chien Hsueh-sheng, a rocket expert and former professor of the California Institute of Technology, and Chu Kuan-ya, a physicist trained at the University of Michigan.[9]

Altogether, only eight persons who had visited or received their education from the United States, served as members of the Central Committee, while as many as seventy-nine of the Chinese students returned from the Soviet Union, at one time or another, made

up one-fourth of the entire membership of the three Central Committees.[10] The near total exclusion of the American trained Chinese students from the policy decision-making process in contemporary China is obvious.

(2)

What factors have contributed to the present situation? Were the students entirely responsible or was the incompatibility of the American system and its misapplication to Chinese conditions equally to blame? To reach an answer, the following points must be discussed.

I - The belief in non-political orientation and its application.

By the time the first group of Chinese students reached America in 1872, the United States had, in its process of nation-building, moved from the period of a struggle for independence to a period of post civil war reconstruction. As Chinese students flocked to America (from 183 in 1909 to 1,124 in 1918),[11] they encountered a nation which had attained a degree of affluent stability. The outstanding characteristics of the American system (due process, civilian rule, a constitutional form of government, etc.) had been firmly established. But the Chinese conditions at this time were

just the opposite of those found in America: chaotic warlordism was rampant and Chinese society sank into what Sun Yat-sen labelled "the sub-colonial status," which was ripe for revolution.

Hopeful Chinese students, searching for China's salvation in America, naturally looked upon the United States as a model for emulation. In the 1920's, they began to shift from copying Japan to copying America as the answer to China's problems. The question involved was whether or not the cardinal values of the American system could or should be transplanted into China. Opinions varied in response to this question. The consensus did not totally reject these values in principle, but was sharply divided as to the methods of approach. In Sun Yat-sen's view, George Washington did not approach the realization of American independence and democracy by resorting to education reforms first. He felt that American values would have to be modified to suit Chinese conditions, and that it could be done, stage by stage, only through revolution. However, the majority of the Chinese students returned from America believed that it could only be done through a gradual process of educational reform. Their representative, Hu Shih, the Columbia graduate and avowed disciple of John Dewey, called for a "literary revolution" and launched their movement to "save country by educational reform."[12]

Actually, the policy advocated by Hu Shih and his colleagues to "save country by educational reform" was not only a reflection of the traditional Chinese view as to the function of education, but also a genuine expression of the American educational spirit of non-involvement in politics. Out of 340 Chinese students who returned from America at that time, 134 were engaged in education (the overwhelming majority of those in education were graduates of Columbia Teacher's College)[13]; the arguments of Hu Shih were effectively substantiated and highly persuasive. This prevailing attitude of non-political involvement in politics also conformed to the long-standing Chinese governmental policy restricting Chinese students in America from engaging in political activities, while encouraging them to enroll in scientific and technical studies. For instance, in 1881, the charge that Chinese students in America violated their pledge of non-political involvement, brought a temporary suspension of the Chinese Education Mission. In 1912, 100 Tsinghua students (the American-supported Chinese preparatory school for future study in America) pledged not to become political officers.[14] As a result, 80 per cent of the 39,531 Chinese students in America graduated in the fields of science (3,872 in natural science, 4,270 in social science and 2,455 in medicine) and engineering (9,023) and with the exception of Sun Yat-sen, none ever thought to start a revolution.[15]

In fact, while Hu Shih shunned politics, his campaign of "literary revolution" gained momentum. His iconoclastic slogan, "Down with the house of Confucius" as indicated by Carsun Chang, Kuo Kan-po and numerous others,[16] successfully swept away the tottering traditional values of China. His endeavor created a vacuum which, with the culmination of the May Fourth Movement, paved the way for the growth of Marxism. John Dewey, on the invitation of Hu Shih, concluded after a two-year visit to China, that "cultural reform itself could not seem to get started until political conditions changed."[17]

Hu persisted in his dream of peaceful evolution, pragmaticism and individualism, and doggedly held to his conviction that "democracy must be realized in education and in industry before it can be realized politically."[18] In response to Hu's persistance, Sun Yat-sen redoubled his efforts to launch his revolution. However, Sun's militancy and anti-imperialistic stand not only alienated the support of a number of American-trained Chinese students who looked to America solely for assistance, but also the support of the American government and the sympathy of the American public. Both Hu Shih and the American government sanctioned the move of Chen Chun-min to unseat Sun from Canton, where he had staged his frustrated campaigns against the warlords. While Sun, in des-

peration, turned to Lenin for help, Hu's new cultural movement also waned. However, Sun succeeded under the assistance of Lenin to reorganize his political structure, Kuomintang, into a one-party dictatorship, based on the Soviet model. Soon Chiang Kai-shek carried out Sun's policy and established the Nationalist regime in Nanking in 1928. American-trained Chinese students gained tremendous influence under Chiang in every aspect of the Nationalist government except the military. Nevertheless, one-party-dictatorship continued. Those students who served under Chiang merely became his tools. They traded the American scholar's ideal of non-political involvement for personal power. T. V. Soong and H. H. Kung held prime ministerships, but they retained their posts by refraining from organizing a political party. In 1930, Professor Holcombe observed that all the principal Bureau chiefs in the Chinese Finance Ministry were Harvard graduates.[19] Those students who maintained their American beliefs were left out in the cold. For example, in 1931, Chiang Yung, a prominent lawyer trained in America, was asked by Chiang Kai-shek to submit a draft of a provisional constitution for consideration. It was to be used for the political tutelage program of KMT. The lawyer obliged. But, in reading over the draft, Chiang Kai-shek discovered an article which stated that, "in service personnel would refrain from

political activities;"[20] the lawyer was never consulted again. Hu Shih opposed the one-party dictatorship. He took a trip abroad. Some students, such as Tao Hsin-chih, who continued to remain aloof from political affiliations, were persecuted.

It was no surprise that Chiang Meng-lin, another prominent graduate of Columbia Teacher's College, one-time Education Minister under the Nationalist government and former President of Peking University, confessed that their efforts to institute a cultural revolution without paying attention to politics were like an attempt to "scratch one's toes without removing the boot."[21] Contrary to the American academic spirit of non-involvement in politics, to which the majority of Chinese students returned from American faithfully adhered, the primary purpose of setting up the Sun Yat-sen University in Moscow where, prior to 1949, 49 of the 79 Chinese students in the Soviet Union graduated, was to help those native students seize power in their homeland.[22] Mao Tse-tung fully appreciated the value that "politics must take command." He said: "Any cultural revolution is the ideological reflection of the political and economic revolutions and must be at their service."[23] An atmosphere under such guidance easily explains the political success of those Chinese students trained in the Soviet Union.

II - Catalyst for change or victim of cultural clash.

The cultural gap between China and western civilization in modern times has been unprecedented in magnitude. A handful of Chinese students were sent to America in an effort to bridge the gap, to revitalize China's declining society, and to bring industrialization to China. The problems they faced were overwhelming.

They first had to resolve the problem of whether or not China should adopt total westernization. Hu Shih believed that it should. He said: "I unreservedly condemn our Eastern civilization and warmly praise the modern civilization of the West. We must admit...that we are inferior to others not only in technology and political institutions but also in moral values, knowledge, literature, music, fine arts and body physique."[24] As a rule, the returned students tended to view their own personal future, as well as that of China, as being contingent on China's ability to adopt elements of the culture, in which they were immersed. Therefore, "they insisted that their ideology be swallowed in total." Even "John Dewey felt that Hu Shih and his colleagues seemed to have been more willing to compromise to American democracy than he was." They, as observed by Nancy Sizer in her article on John Dewey's ideas in China, "attempted less to adapt Dewey to the Chinese philosophy than to

adapt Chinese philosophy to Dewey."[25] Such an attitude, if adopted, would surely encounter such criticism as "the universities teach American politics, American economy, American this and American that."[26] And such criticisms would certainly come as a result of the rising feelings of nationalism, those which Sun Yat'sen had tried so vehemently to instill in China. In 1931, a League of Nations' observer, after reviewing the Chinese college curriculum, asked "whether it is for Western students who are studying China or for Chinese students who are studying the West."[27] The practise of American racism in the 1920's and 1930's, along with the compromise of President Wilson's idea of self-determination, solidified the dissenters.[28] Even the very source of support for the Tsinghua University, which was drawn from the remission of the Boxer indemnity, reminded the students of China's humiliation.

Secondly, if total adoption of Westernization was not acceptable, the Chinese students returned from America had to decide which outstanding American values would be most suitable for China. Except in the fields of science and technology, their impressions of American values varied in proportion to their degree of understanding. For instance, it is difficult to ascertain if Mme. Chiang Kai-shek, an honor student from Wesleyan College, had any reservations in regard to the American constitutional form of

government. However, in 1943, her brother-in-law, H. H. Kung, the durable Minister of Finance under Chiang Kai-shek and a former student at Yale University, ridiculed American elections by likening them to a circus coming to town.[29] While he was President of the Executive Yuan in 1934 and 1935, Kung instituted such un-American measures as the nationalization of silver, allowing for governmental ownership of private banks, etc.

Thirdly, there are few Chinese students who held to the premise that China would achieve industrialization by following the American road. For instance, the Democratic League, the only independent political organization outside of the KMT, had a heavy membership of American-trained students,[30] yet was all out for a planned economy. Chiang Kai-shek alleged that the League sold China out to the Chinese communists.

Although Chinese students in America failed to find a ready-made panacea for revitalizing China, they did find an interesting parallel between the American academic world and the deeply ingrained Chinese tradition of degree worship. In order for a Chinese student to establish his status in America, he must work for, and eventually obtain, a degree. But the programs offered by American universities were not intended to suit the needs of China. Therefore, a Chinese student might earn a doctorate in heat trans-

mission at MIT, and it would be irrelevant to the needs of China which lacked basic plumbing. As one returned student explained, "the principle cause for very few Chinese students of American agriculture, who are working in an agricultural occupation, is probably due to the fact that their training is not applicable to Chinese agriculture."[31] Stories, such as the Chinese student who received a doctorate in electrical engineering from America but could not replace a fuse, were commonplace. In 1919, the Committee on National Industries pleaded to the Chinese students in America, "we want to boycott Japanese umbrellas, but you must help us by learning how to make them. Otherwise, we will go without umbrellas."[32] The tragic effect of this degree worship was that only 52 per cent of the American-trained students were able to fully utilize their knowledge.[33]

Another problem resulting from this demand for a degree was that a number of Chinese students, especially those who majored in social science and humanities, wrote their theses on subjects introducing China to the West. For example, among thirty such doctoral dissertations published in America before 1925, twenty-seven were in this category. Among well-known Columbia University graduates: Hu Shih's dissertation was on the Development of the Logical Method in Ancient China; Chiang Meng-lin's was

on A Study in China's Principle of Education; and Willinton Koo's was on the Status of Aliens in China. Their contributions may have greatly enriched American culture, but their efforts were certainly contrary to the purpose for which they were sent.

Furthermore, since study in America was the highest achievement a Chinese student could attain, it became logical for a Chinese institution to lecture in English and to use American textbooks; thus giving the Chinese student in America preparation to compete on an equal footing. However, as a Chinese student mastered English, his Chinese correspondingly decreased. So even if a Chinese student in America earned the highest degree, he found difficulty communicating in his native tongue. His inability to write in Chinese restricted his ability to spread and teach the knowledge so vital to China. For instance, there were 1,815 scientific papers produced by members of the physics branch of the Academia Sinica before 1948, yet 1,707 of them were written in English. Yung Wing was denied a ministerial position by Li Hung-chang because of his Chinese. It was no secret that, as late as 1945, T. V. Soong often had difficulty defining problems in Chinese. To the confusion and consternation of all, he usually communicated his decisions in English.[36]

III - American standard of living and alienation.

Everyone likes comfort. To this, one cannot expect that the American trained student would take exception. Once exposed to America's luxuries, it would require extraordinary courage and religious dedication to return to China's poverty stricken rural communities. The fact that most Chinese students in America came from the upper strata of Chinese society or from the comparatively prosperous coastal regions complicated the matter. In 1945, one-third of them came from Kwangtung and one-fourth from Kiangsu. In 1947, 57 per cent were from business or professi onal families.[37] Due to these factors, two problems plagued the entire history of Chinese students in America: expatriation and alienation. Despite restrictions imposed by both the Chinese and American governments to check against expatriation among the Chinese students in America, this problem has continued to exist since the very first day Chinese students came to the United States. The first Chinsse student in America, Yung Wing, set the example. For various reasons, in 1937, 21 out of 1,152 Tsinghua students who received their education in America remained.[38] In 1950, due to the changing political situation, nearly 2,600 Chinese students out of 3,900 stayed in America.[39] After 1950, the United States government reversed its policy of discouraging expatriation. As a result, in 1960, 1,124

Chinese students served on the faculties of many American colleges and universities,[40] mostly in the fields of science and technology. For example, among 388 National Central University graduates who remained in America, only 51 are in the fields of social science and humanities.[41] "The moon shines brighter in America than in China" became one of the standard satirical comments decrying the loss of some of China's finest brain power. "With an American degree I could get a better wife" became a popular comic strip gag line.

In addition to the problem of the growing fields of exiles abroad, the Chinese students returned from America, consciously or unconsciously, incurred varying degrees of alienation from the peasant masses and even their own homes. Since thirty per cent of them became college professors, the fact that China's institutions of higher learning were clustered in a few coastal cities tended to aggravate their isolation from the vast interior. They earned the name of "ivy tower geologist." Keeping this maladjusted condition in mind, Pearl Buck appealed to them in 1934 to go out and settle in the towns and villages of the "real" China.[42] A survey of the Tsinghua alumni in 1937 revealed that thirty-four per cent of them lived in Shanghai, and another thirty-nine per cent settled in six other major cities. As late as 1946, out of a total of 207 colleges

and universities in China, 57 were located in the regions of Shanghai and Nanking, 25 in Peking and 17 in Canton. The effect of this situation was the almost complete disassociation of the returned students from the peasantry.[43]

Furthermore, it would have taken extraordinary discipline for a Chinese youth to stay in America for a few years, acquiring American knowledge in science and technology, while remaining immune to American habits and ideas. Since the chasm between the cultures of China and America was great, the unavoidable Americanization of the returned Chinese students became a disruptive element, not only in society, but in the family as well. Chiang Meng-lin once related that "after a few years stay in America he and his father often sat for hours, feeling great emotion, realizing that they would not be able to talk together, they were both content to sit."[44] Chiang's situation represents a common occurence in the family when a Chinese student returned home. Worst of all, the rate of compensation in Chinese society was historically never commensurate to that which Chinese students were accustomed in America. The differentiation in the standard of living between China and America was immeasurable. In order to sustain their high life style, some of the returned students resorted to extracurricular means of obtaining additional income. Whether

or not this disparity between income and cost of desired standard of living was a causal factor in the rampant irregularities found in those government agencies administered by American-trained students is debatable. However, the devastating indictment against those American educated Chiangs, Soongs, Kungs and Chens, who acquired vast holdings in China's meagre industries, banks and other enterprises, brought forth in Chen Cho's voluminous Documentary History of Modern China's Industries is difficult to disprove.[45] Indeed, some students returned from America joined the ranks of compradors who have become the whipping boys of all Chinese propaganda.[46] Thus the Chinese students who returned from America not only isolated, by default, themselves from the peasant masses but also exposed themselves to attack as selfish agents of the decadent capitalists. This was politically disastrous to the returned students. It was difficult for them to maintain their positions of influence in the Nationalist government when the economic conditions in China deteriorated during the 1940's under the pressure of Japanese invasion.

(3)

In spite of their multiple failures to transform China into the image of the United States, the American-trained students, by

and large, have accomplished the assigned objective which Li Hung-chang had clearly defined one hundred years ago. That was to inject into China's culture the elements she most lacked -- science and technology -- so that China, as a nation, could assert herself. This objective was also spelled out by Chang Chih-tung[47] in his famous essay, Exhortation to Learning of the necessity to utilize Western science and technology for the sake of strengthening Eastern culture. To accomplish this purpose, the performance of Chinese students who returned from America was outstanding. Their significant accomplishments could be characterized as follows:

(1) The lessening of the Chinese inferiority complex and replacement of the Japanese as transmitters of Western science and technology to China, 1900-1931.

On the one hand the acceptance of Western superiority spurred the Chinese to search for their own survival by learning from the West; on the other it generated an inferiority complex among them which, to some extent, was counter-productive. For instance, in 1889 when they debated whether or not China should construct railways, Liu Hsi-huang, the former Vice-Minister to Germany, argued that China would never be able to catch up the West so that she might as well give up.[48] After the defeat by Japan

in 1895, and the debacle of the Boxer Affairs in 1900, even Liang Chi-chao admitted that "during the score of years we always felt that we were far inferior to those of others."[49] At this time not only the sign that "Chinese and dogs were not allowed" was hanging on the gate in the foreign settlement, but also the notion that Chinese by their mentality were incapable of mastering science and technology, became widespread. It was not surprising that a Chinese students in London, as reported, introduced himself as "being a world-despised Chinaman" to his audience. In 1898, when the first modern Chinese Capital University was established (the later Peking University), the Dean and the entire faculty of the Science Department were staffed by twelve Japanese.[50] In 1907, the number of Chinese students in Japan jumped to 17,860.[51] In 1909, there were 356 foreign teachers in China, of whom 311 were Japanese.[52]

However, it was also in 1909, that two significant events in connection with the movement of studying in America took place: one was that large groups of Tsinghua College graduates (later the Tsinghua University) began to visit America. A glance through the incomplete Register of Tsinghua Graduates in America would reflect the magnitude of its operations. Between 1909 and 1922, 245 Tsinghua students came to America. Fifty-eight entered social science disciplines and 159 enrolled in the fields of natural science

and engineering. They studied at such major centers of learning as Harvard, MIT, Cornell, and Columbia. The highest enrollment of these students (32) was at MIT where they undertook various disciplines ranging from agriculture to shipbuilding. Most of these 245 students are alive today and are leading figures in their respective fields.[53]

The second event was the completion of the Peking-Chang Chia-ko (Kalgan) Railway by a Chinese engineer, Chan Tien-yu (Jeme Tien Yau) who was sent by Li Hung-chang to the United States for training in engineering through the Chinese Education Mission. He completed his studies at Yale University and returned to China in 1881. In 1905, he was entrusted to build the Peking-Chang Chia-ko Railway. This line was known to be more difficult to construct than any other line in China which was under foreign construction at the time. But Chan finished this 250-kilometer track including a branch line four months ahead of schedule and at a cost much lower than that of other lines. Minister of Post and Communications, Hsu Shih-ch'ang, in recognizing Chan's contribution, remarked that "when construction of this line was to begin, foreign observers all forecast a failure because they thought that Chinese engineers were inferior to Western engineers. This opinion was so prevalent that it was accepted as a fact."[54] Now this

was proved not to be the case.

Chan's accomplishment, coupled with the Japanese defeat of Russia in the Russo-Japanese War in 1905, began to dispel the feeling of despondency in China; if Japan could, why not China? Chan offered an example. His success also inspired Chinese to redirect their attention to the values of American education. The operation of Tsinghua College opened the way. In the 1920's, MIT-trained chemists Wu Hsien, Tseng Chao-lun, Tsinghua-trained pharmacologist K. K. Chen, etc., and Chicago-educated physicists such as Wu Yu-hsun and others not only began to break the Japanese monopoly to teach science in China, but also gained international recognition. Soon America-educated Chinese mathematicians, in addition to others, followed suit. In the 1927 edition of Who's Who in China, American-educated entrees accounted for 186 as compared to 96 Japanese-trained. In 1936, of the foreign teachers in Chinese institutions of higher learning, 387 came from the United States, 309 from Western Europe, and only eight from elsewhere.[55] In 1937, the year the Sino-Japanese War broke out, there were 94 Chinese professors at Tsinghua University; 69 were trained in America, 16 in Europe, and only three from Japan.[56] Gone was the factor of Japan in Chinese education.

(2) The introduction of the American mass educational system as a replacement of the thousand-year-old Chinese examination institution, 1922-1950.

No doubt the Chinese examination system is unique in East Asian civilization. It served as the most stable political and educational institution in Chinese history. Western observers such as John Foster Dulles' grandfather, Secretary of State under President Harrison, and the British Consul. T. T. Meadows, acclaimed it as "pure democracy." However, its fossilization in modern times also was alleged to be the most stubborn force retarding China's advance in science and technology. In 1903, powerful regional leaders such as Chang Chih-tung and Yaun Shih-kai pointed out the danger and argued for its gradual abolition. They said to the court, "China is not without men who are worrying about the times, but we have not yet heard of any of the gentry class who are urging the building of schools. This is due to the fact that the interest of the multitude is in the civil service examination. Thus, as long as the civil service examination is not abolished there is no chance for the schools to be very prosperous. China will be unable to advance to wealth and power."[57] In 1908, steps were taken by the government to gradually phase it out. But at that time China tended to imitate Japan in all areas.

After the 1911 revolution, those Tsinghua students who attended the Teacher's College of Columbia University returned. Outstanding graduates such as Hu Shih, Chiang Meng-lin, Kuo Pin-wen, and Tao Hsin-chih immediately launched a new education movement. Hu and Chiang were active in the North at Peking, while Kuo and Tao were in the South at Nanking and Shanghai. Chinese education associations were formed to promote their ideas at various places. In 1922, their efforts bore results. The Ministry of Education in Peking formally adopted the resolution of the Federation of the Educational Association of China as the new educational system of China. The standard characteristics of the American education, such as the departmentalization of subjects, the credit systems, the manner of awarding degrees, the school structure, and the liberal attitude toward discipline also became the standard characteristics of Chinese education. A new era began in the Chinese school system,[58] though the Peking government at that time was powerless. But due to the fact that the overwhelming majority of the administrators and teachers in Chinese schools and in Chinese institutions of higher learning were graduates of the Teacher's College of Columbia University, the new educational system was widely and rapidly implemented. For instance, in 1925, out of 224 prominent Chinese college administrators, teachers and government education

officials, 134 were trained at the Teacher's College.[59] Therefore, they had succeeded in altering the fabric of Chinese society by eliminating the examination system long before the rise of Communism. The introduction of the American educational system in China was a profound revolution.

During the ascendancy of the Nationalist government in China, the liberal educational principles embodied in the school system of 1922 were blamed for rapid expansion of the universities, the generally declining academic standards, and the numerous student strikes. In line with the general political orientation of the Kuomintang, education was declared to be an ideological weapon of the party. However, the Americanization of Chinese education was largely retained. From 1932 to 1944, the credit system in Chinese universities was standardized, and a minimum of 132 credits was required for a four-year bachelor's degree. Efforts were made to standardize all university curricula. In addition, a post-graduate training program was carried out at various universities. Even Tsinghua University launched a research institute of its own. After the Sino-Japanese War broke out in 1937, American-trained students gained influence in proportion to the rise of American influence in China. In 1948, there were 81 fellows in the Academia Sinica; among them, 52 were educated in America, 23 in Europe, and six

in China.[60] At the same time, Chinese students also swarmed over every major campus of the American universities. The number of them reached a zenith of 3,924 in 1949.

(3) The continuous role of returned students as the nucleus of China's scientific and engineering man-power.

It is undeniable that in 1949, American-trained Chinese students were excluded from positions of policy-making in China. However, in spite of the fact that nearly half of the top flight American-trained Chinese scientists and engineers remained abroad, those who returned to China still constituted the backbone of China's scientific and engineering manpower. (See Appendix I). By virtue of their seniority and training, not only did they survive the onslaught of the Soviet influence in the 1950's, but they also resurged as the leading force in research and development in science and engineering in China. A few statistics will clarify this statement:

(a) Taking the Chinese Academy of Sciences as an example, its structure was undoubtedly modeled after the Soviet Union, but over fifty per cent of its top-ranking research people were Chinese students who returned from America.

As of 1962, out of 188 Board members of the Chinese Academy of Sciences, 88 were trained in America; out of 55 members

on the Standing Committee of the Board, 27 were educated in the United States (see Appendix II). There were 125 Directors or Deputy Directors of the 84 Research Institutes in various disciplines in the Academy of Sciences: American-trained accounted for 45, Western Europe, 37, and Japan, only two (See Appendix III). There were 29 research institutes at the Chinese Academy of Agricultural Sciences, and American-trained Directors accounted for twelve (See Appendix IV). There were 21 research institutes at the Chinese Academy of Medical Science, with the President and five Directors being American college graduates (See Appendix V).

Among the total of 551 leading scientific researchers at the three Academies of Sciences, 150 were known as American-educated.

(b) In the institutions of higher learning, as of 1962, among 47 Presidents or Vice-Presidents of the leading colleges and universities, there were 18 trained in the United States, eight from Western Europe, five from Japan, and two from the Soviet Union; among 246 selected leading professors, 85 were trained in the United States, 22 were from Western Europe, two were from Japan, and four were from the Soviet Union.[61] Among 354 tentatively selected prominent American-trained Chinese

scientists and engineers, 148 joined the Academy of Sciences as research fellows, 121 remained as professors in various institutions, 13 served as chief engineers in the ministries of the State Council, and four served as Vice-Ministers.[62] It is interesting to note that Chinese students returned from America have continued to dominate the teaching and research fields. They have relatively maintained the posture of detachment from politics, and remained behind in practical application of their acquired knowledge.

(c) According to a selected list of 1,200 prominent Chinese scientists and engineers on the Chinese mainland by Cheng Chu-yuan in his Scientific and Engineering Manpower in Communist China, 1949-1963, for the first time in modern China's history the numbers of native-educated persons led the list. It was 516 of native-educated, as compared to 354 of American-trained, 184 of Western Europe, and 13 each of the USSR and Japan. Among the American institutions in which Chinese scientists and engineers were trained, 34 accounted for Harvard, 34 for Cornell, 24 each for MIT and Chicago, 23 for CIT, 20 for Michigan, 18 for Minnesota, 14 for Columbia, 15 for Wisconsin, etc. (See Appendix VI). It is also clear that the percentage of the native-trained Chinese engineers who engaged in practical works is higher than those trained abroad. They are the doers and are responsible for

actual production and management.

However, the breakthrough in the field of nuclear fission in 1964 was credited to 19 scientists and engineers, of which 12 were American-educated, five were educated in Western Europe, one was trained in the USSR, and another in China. Of the American-trained, seven earned their degrees from the California Institute of Technology. They are Chien Hsueh-sheng, Chao Chung-yao, Wang Kan-ch'ang, Hu Ning, Kuo Yung-huai, Li Cheng-wu, Chou Pei-yuan; others are Chang Chia-hua, graduated from Washington University, Shih Wu-wei, Yale, Teng-Chia-hsien, Purdue, Wang Chan-chu, Michigan, and Wang Tien-chu, Columbia. Those who were trained in Western Europe are Chien San-ch'ang, a student of the University of Paris, Chu Hung-yuan, Manchester, Chou Kuang-chao, USSR, Chang Tsung-sui and Chang Wen-yu, Cambridge, Yang Li-ming, Edinburg, Ho Chi-tsui, China and Berlin.[63] The contribution of the returned students from America is self-evident.

Furthermore, there are 52 various scientific and technical associations in China, with 261 persons serving as its Presidents and Vice-Presidents. Sixty of them are educated in the United States (see Appendix VII). In view of the fact that after 1950, there were nearly 61,000[64] Chinese students who returned from the Soviet Union, it is no accident that the American-trained scientists

and engineers continued to maintain a lead. After the complete withdrawal of Soviet assistance by Khrushchev in the 1960's, the presence of American-trained personnel made it possible for Chinese scientists and engineers in Chinese industries to forge ahead without facing great catastrophes. The admission of Chien Hsueh-sheng and Chu Kuang-ya to membership to the 9th Central Committee of the Chinese Communist Party in 1969 was a show of appreciation for these American-trained students. The bestowing of national honors to physicists Chao Chung-yao of Cal Tech and Wu Yu-hsun of Chicago by seating them on the Presidium of the National People's Congress was another demonstration that Chinese returned students from America have accomplished their objectives.

(IV)

In short, the impact of the Chinese students returned from America to China is profound. They are builders, and they have helped China achieve industrialization on her own. China's industrial capacity may be considerably behind Japan and Western Europe, but China has orbited a satellite while Japan and Western Europe have tried but failed.

Footnotes

1. Li Hung-chang, I-shu Han-kao; Teng, Ssu-yu and John K. Fairbank, China's Response to the West, New York, 1966, Document 23, pp. 91-93. Hereafter referred to as Teng.

2. C. K. Wang, Chinese Intellectuals and the West, University of North Carolina Press, 1966, Appendix B, p. 511. Hereafter referred to as Wang.

3. Lo Chia-lun, ed. Kuo-fu Nien-pu, Taipei, 1965, V. I, pp. 323-401; Chuzo Ichiko, "The Role of the Gentry," Mary Wright ed. China in Revolution, Yale University Press, 1968, pp. 314-317.

4. Who's Who in China, Liang Yu, Shanghai, 1937.

5. China Institute Bulletin, New York, V. 7, No. 3.

6. Wang, p. 137.

7. Who's Who in Communist China, Union Research Institute, Hong Kong, 1966.

8. Jen-min Shou-tse, Peking, 1965; Donald W. Klein, et al. Biographic Dictionary of Chinese Communism, Harvard University Press, 1971, p. 1160. Hereafter referred to as Biographic Dictionary.

9. Peking Review, No. 24, April 14, 1969.

10. Biographic Dictionary, V. 2, pp. 1059-1160.

11. "English Secretary's Report," The Chinese Students Monthly, V. 5, No. 1, p. 3, November, 1909.

12. Griedier, J. Hu Shih and the Chinese Renaissance, Harvard University Press, 1970; Young, Chen-ping, the Political Thought of Hu Shih, Taipei, 1968.

13. Y. T. Tsur, Who's Who of American Returned Students, Peking, 1917.

14. The World Chinese Students Journal, Shanghai, September, 1912, p. 87.

15. Wang, Appendix B, p. 511.

16. Carsun Chang, The Development of the Neo-Confucian Thought, New York, 1962, V. 2, pp. 6-7; Kuo Kan-po, Chin Wu Shih Nien Chung Kuo Ssu Hsiang Shih, Hong Kong, 1965, pp. 277-283.

17. John Dewey, "Industrial China," New Republic, No. 314, December 8, 1920.

18. John Dewey, "New Culture in China," New Republic, No. 7, July, 1921.

19. Wang, p. 94.

20. Personal conversation with Yu You-jen (late President of Control Yuan, Republic of China), while the writer served as his secretary during 1943-44.

21. Chiang Meng-lin, Chen Pao, Peking, Novemeber 1924, 6th Anniversary Issue; Linder, Allen B. "Politics and Education in Nationalist China," Journal of Asian Studies, v. XXVII, no. 4, 1968, p. 776.

22. Rosen, Seymore, "The People's Friendship University in USSR," Office of Education, No. 44, 1960.

23. Mao Tse-tung, "On Massline," Collected Works, New York, v. 3, 1953, p. 141.

24. Hu Shih, Wen-tsen, Taipei, 1953, v. 3, pp. 14-16.

25. Sizer, Nancy, "John Dewey's Ideas in China," Comparative Education Review, October 1968, no. 3, pp. 390-404.

26. "The Revolving Education," Chiao Yu Tsung Kan, Shanghai, 1925; Wang, p. 371.

27. The Reorganization of Education in China, International Institute of Intellectual Cooperation, 1932; Perke, Cyrus H., Nationalism and Education in China, New York, 1932, p. 76.

28. Shill, Chao-yung, "The Effects of the Immigration Bill of 1924 on Chinese Students," Chinese Students Monthly, v. 20, No. 12, pp. 16-19.

29. Personal recollection while the writer attended the Senior Civil Service Institute, Chungking, 1943.

30. Kuang Ming Jih Pao, March 4, 1956.

31. D. Hoe Lee, "The Chinese Students of American Agriculture," Chinese Students Monthly, February 1926.

32. Wang, p. 185.

33. Wang, p. 172.

34. American Doctoral Dissertations, Library of Congress (Kraus Reprint).

35. Wang, p. 420.

36. Personal recollection while the writer worked for the Nationalist Government at Chungking; Y. C. Wang related, though disputed, that "his (Soong) speeches were written in English and then translated for delivery, and important documents requiring his personal attention had to be translated into English first," p. 441.

37. Wang, pp. 151-155.

38. Wang, p. 189.

39. Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963, National Science Foundation, 1965, pp. 220-227. Hereafter referred to as Cheng; Wang, p. 189.

40. Directory of Chinese Members of American College and University Faculties, China Institute in America, New York, 1965.

41. National Central University Alumni Register, Taipei, 1971, pp. 159-171.

42. Buck, Pearl, Tell the People, New York, 1945.

43. Kiang Yen-cheng, "The Geography of High Education in China," 1955, unpublished Ph. D. dissertation, Columbia University.

44. Sizer, op. cit., p. 391.

45. San Lien Shu Tien, Peking, 1961.

46. Hao Yen-ping, The Compradors in Nineteenth Century China, Harvard University Press, 1970.

47. Ayers, William, Chang Chih-tung and Chinese Educational Change, Cambridge, 1970.

48. Dow, T. I. Li Hung-chang Nien-pu, Hongkong, 1968, pp. 217-221.

49. Teng, pp. 267-271.

50. Fang Chao-yin, ed. Chin Shih Ta-Hsueh Tang Tung Hsueh Lu, Academia Sinica, 1962.

51. According to Kuo Mo-jo, there were 300,000 Chinese students in Japan between 1898-1950. See Saneto, Keisu, History of Chinese Students Studying in Japan, Tokyo, 1960, p. 96. Hereafter referred to as Saneto.

52. Ibid.

53. Fang Chao-yin, Tsinghua Liu-mei Tung-hsueh Lu, 1909-1922, Academia Sinica, 1962.

54. Ling, Hung-hsun, Chan Tien-yu Nien-pu, Taipei, 1961.

55. Saneto, p. 96.

56. Tsinghua Ta-hsueh I-lan (Tsinghua University), Peking, 1937.

57. Teng, Document 51, pp. 206-207.

58. Ho, Pin-sun, Chinese College Education in the Last Thirty Years, Shanghai, 1931; Rugh, Arthur D. "American Influence in China's Changing Education," 1940, unpublished Ph. D. dissertation, University of Washington.

59. Kao, Lin-yin, "Academic and Professional Attainment of Native Chinese Students Graduating from Teacher's College, Columbia University, 1909-1950," Unpublished Ph. D. dissertation, Columbia University, 1955.

60. Wang, p. 180.

61. Cheng, pp. 230-233.

62. Compiled from the Biographic Data in Cheng's Scientific and Engineering Manpower in Communist China, pp. 371-572.

63. Cheng, p. 239; Jen-min Shou-tse, 1965.

64. Price, R. F. Education in Communist China, Praeger, 1970, p. 103.

BIBLIOGRAPHY

Boorman, Howard L. et. al., Biographical Dictionary of Republic of China, New York, 1967.

Buck, Pearl S., Tell the People: Talks with James Yen about the Mass Education Movement, New York, 1945.

Chen, Cho, Chung-kuo Ching-tai Kung-yeh Shih Tzu-liao (Documentary History of Modern China's Industries), Shanghai, 1957.

Chen, Li-fu, Chinese Education During the War, Chungking, 1942.

Ch'en, Hsu-ching, "Problems Regarding the Education of Returned Overseas Students," People's Daily, Peking, April 8, 1960.

Cheng, Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963, Washington, D. C., 1965.

Chiang, Mon-lin, Tides from the West, New Haven, 1947.

Chiang, Wei-chiao, "From the Ministry of Education in Nanking to the Ministry of Education in Peking," Chiao-yu Tsai-chih, Shanghai, 1912.

Chiao-yu Tsai-chih, Journal of Education, Shanghai, 1909-1948.

China Institute Bulletin, New York, 1936-1947.

Chinese Students in the United States, 1948-1955, Institute of International Education, New York, 1962.

Chinese Students Monthly, published by the Chinese Student's Alliance in the United States, 1905-1930.

Chu, Ching-nung, "Survey of Chinese Studying Abroad," China at War, December 1944.

Chung-hua Chiao-yu-chih (Year Book on Chinese Education), Shanghai, 1912-1937; 1947-1950.

Chung-hua Min-kuo K'o-hsueh-chih (Year Book on Chinese Science), Taipei, 1955.

Chung-yang Jeh-shih Tzu-liao (Materials on Center Government Personnel), Taipei, 1950.

Chung-yang Yen-chiu-yuan Yuan-shih-lu (Academic Senica), Nanking, 1948.

Dewey, John and Alice, Letters from China and Japan, New York, 1921.

Directory of Chinese Communist Offices Provincial, Municipal and Military, U. S. Department of State, Bureau of Inteiligence and Research, Washington, D. C., 1969.

Directory of Chinese Members of American College and University Faculties, China Institute, New York, 1965.

Directory of Chinese Students in Colleges and Universities in the United States, China Institute, 1951--.

Directory of Chinese University Graduates and Students in America, China Institute, 1943-1945.

Directory of National Central University Alumni, New York, 1971.

Fang, Chao-ying, Ching-mu Min-chu Yang-hsueh-sheng Tieh-min-lu Chu-chih, (Directory of Modern Chinese Students Abroad), Taipei, 1962.

Fraser, Stewart E., "Symposium: International, Cultural and Cultural Relations," Comparative Education Review, February 1969.

Fryer, John, Admission of Chinese Students to American Colleges, Washington, D. C., 1909.

Gould, Sidney H., Sciences in Communist China, Washington, D. C., 1961.

Gregg, Alice H., China and Educational Autonomy, Syracuse, 1946.

Griedier, Jerome, Hu Shih and the Chinese Renaissance, Cambridge, 1970.

Hao, Yen-ping, The Comprador in Nineteenth Century China, Cambridge, 1970.

Ho, Ping-sung, Chinese College Education in the Last Thirty Years, Shanghai, 1931.

Hu, Shih, Liu-hsueh Jih-chi (Diary While Studying Abroad), Shanghai, 1947-48.

Ikle, F. C. The Growth of China's Scientific and Technical Manpower, Santa Monica, 1957.

Israel, John W., Student Nationalism in China, Stanford, 1966.

Jen-min Chiao-yu, (People's Education), Peking.

Jen-min Shou-ts'e (People's Handbook), Peking, 1965.

Kao, Lin-yin, "Academic and Professional Attainments of Native Chinese Students Graduating from Teacher's College, Columbia University, 1909-1950," unpublished Ph.D. dissertation, Columbia University.

Kiang, Yin-cheng, "The Geography of Higher Education in China," unpublished Ph.D. dissertation, Teacher's College, Columbia University, 1955.

Klein, Donald W. et al, Biographic Dictionary of Chinese Communism, Cambridge, 1971.

K'o-hsueh Tung-po (Science), Peking.

Ku, Tung-jo, "One Hundred Years of Chinese Students Educated in the United States," Tsu-Kuo, 4-13, 1959.

Kuo, Kan-po, Chin Wu-shih-nien Chung-kuo Ssu-hsiang Shih, (History of Chinese Thought in Last Fifty Years), Peiping, 1935.

Kuo-li Tsing-hua Ta-hsueh I-lan (Tsinghua University), Peking, 1937.

Li, Hung-chang, I-Shu-Han-Kao; Ssu-yu Teng and John K. Fairbank, China's Response to the West, New York, 1966.

Li, Ju-min, "Criticism of the Movement to Study Abroad and a Suggested Future Policy," Chung-hua Chiao-yu Chih (Society for Chinese Education), Shanghai, vol. XV, no. 9.

Li, Kuang-pi, ed., Chung-kuo K'o-hsueh Chi-shu Fa-ming ho K'o-hsueh Chi-shu Jen-wu Lun-chi (On Chinese Inventors and Scientists), Peking, 1955.

Linden, Allen B., "Politics and Education in Nationalist China," Journal of Asian Studies, v. XXVLL, no. 4, 1968.

Liu, Li-shan, "A Student Back from America," China Reconstructs, August 1956.

Lo, Chia-lun, ed., Kuo-fu Chuan-Chi (Collected Works, Sun Yat-sen), Taipei, 1961.

Ma, Yin-chu, "My Philosophy and Economic Theory," Hsin Chien-she (New Reconstruction), no. 11, 1959.

Mai, Hua-chuan, "The Returned Student in China," Chinese Recorder, March 1917.

Meng, Chih, "The American Returned Students of China," Pacific Affairs, no. 1, 1931.

Orleans, Leo A., Professional Manpower and Education in Communist China, Washington, D. C., 1961.

Perleberg, Max, Who's Who in Modern China, Hong Kong, 1954.

Price, R. F., Education in Communist China, New York, 1970.

Shill, Chao-ying, "The Effects of the Immigration Bill of 1924 on Chinese Students," Chinese Students Monthly, December 1923.

Shu, Hsin-cheng, China-tai Chung-kuo Liu-hsueh-shih (History of Modern China's Dispatching Students Abroad).

Sizer, Nancy F., "John Dewey's Ideas in China," Comparative Education Review, October 1966.

Survey of Chinese Students in American Universities and Colleges in the Past Hundred Years, China Institute in America, New York, 1954.

Tsinghua Tung-hsueh-lu (Directory of Tsinghua Students), Tsinghua University, Peking, 1937.

Wallace, J. A., "Chinese Students in Tokyo and the Revolution," North American Student, June 1913.

Wang, C. K., Chinese Intellectuals and the West, Chapel Hill, 1966.

Who's Who of Academia Sinica, Nanking, 1948.

Who's Who in Communist China, Union Research Institute, 1966.

Who's Who of Chinese Students in America, Berkeley.

Young, Chen-ping, Hu Shih ti Cheng-chih Ssu-hsiang (The Political Thought of Hu Shih), Academia Sinica, 1967.

Yuan, Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960, Washington, D. C., 1961.

Yung, Shang Him, "The Chinese Educational Mission and its Influence," Tien Hsia Monthly, October 1939.

Yung, Wing, My Life in China and America, Peking, 1957.

APPENDIX I.

Type of Employment of 1200 prominent engineers and scientists in the People's Republic of China, 1964.

Type of Organization	No. Employed
Chinese Academy of Sciences	551
Institutions of higher learning	381
Research Institutes	120
Government	28
State enterprises	87
Others	33

Educational background of 700 prominent scientists and engineers in the People's Republic of China, 1962.

Degrees	Total	U. S.	W. Europe	USSR	Japan	China
	700	373	217	15	28	85
PhD or ScD	442	269	157	3	3	1
Others	258	104	60	12	25	84

Field of Chinese Doctoral Students in America, 1905-1960.

Fields	Total
Humanities	327
Social Sciences	548
Physical Sciences	696
Biological Sciences	439
Health Sciences	149
Engineering Sciences	590
TOTAL (grand)	2789

Source: Yuan Tung-li. A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.

APPENDIX II.

Sources: Jen-Min Jih-Pao (People's Daily), June 3, 1955 and May 31, 1957.
K'o-Hsuh Tung-Pao (Bulletin of Chinese Academy of Sciences), No. 9, 1955.
Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.

EDUCATIONAL BACKGROUND OF THE 190 MEMBERS OF THE BOARD OF THE CHINESE ACADEMY OF SCIENCES (NATURAL SCIENCE & ENGINEERING)

Countries	Physics Astronomy	Math	Chemistry Biochemistry Chemical Engineering	Biology Botany Zoology Physiology Microbiology	Agronomy	Medicine Pedology Veterinary Bacteriology	Geology Geophysics Paleontology	Geography Meteorology	Architecture	Petroleum Civil Electrical Mechanical Engineerg.	Metallurgy	Other	Total
U. S. Canada	13	3	10	23	3	8	8	1	2	13	6	3	93
Western Europe (England France & Germany)	9	5	9	11		5	11	2		5	4	1	62
U.S.S.R.										1			1
Japan		2		2	3		1		1				9
China			3	1		3	3			3	1		14

APPENDIX III.

EDUCATIONAL BACKGROUND OF THE DIRECTORS AND DEPUTY DIRECTORS OF THE CHINESE ACADEMY OF SCIENCES, 1964

Research Institutes	Director	Deputy	Education
Applied Chem. Chemistry	Wu Hsun-chou		Cal. Inst. of Tech.
		Sun Ching-pin	?
		Chang Tung-kang	?
Applied Phys.	Shih Tu-wei		Yale
		Lu Hsunghan	?
Semi-condctrs.	Huang K'un		?
Atomic energy	Chien San-chiang		Paris
		Chao Chung-yao	Cal. Inst. of Tech.
		Cheng Lin	?
		Chang Chia-hua	Washington Univ.
		Wang Kan-chang	Berlin
		Ping Huan-wu	Edinburg
		Liang Chao	?
Organic Chem.	Wang Yu		Germany
		Pien Po-Ming	?
Mathematics (Peking)	Hua Lo-Keng		Cambridge & Univ. of Illinois
		Fan Teng-chi	?
		Su Pu-ching	Japan
		Wu Wen-chun	Cornell Univ.
Mechanics	Chien Hsueh-shang		Cal. Inst. of Tech.
		Kuo Yung-huai	" " " "
		Yang Kang-i	?
		Lin Tung-chi	London
Materia Medica	Chao Cheng-ku		Germany
		Kao I-sheng	Oxford
		Hsu Lan-hsuan	?

Institutes	Director	Deputies	Education
Electronics	Li Chiang		USSR
		Ma Ta-yu	Harvard
		Ko Yen-chang	?
Physics	Shih Tu-wei		Yale
		Wu Chien-chang	?
Observatory	Chiang Yu-che		Chicago Univ.
(Nanking)		Chu Len-chun	?
(Shanghai)		Chen Piao	?
(Peking)	Li Heng		France
	Cheng Mao-lan		France
Mathematics (Shanghai)	Chen Chien-kung		Princeton
Chem. Phys.	Pai Chien-fu		?
High Polymer	Yu T'ung-yin		Univ. Michigan
Acoustics	Wang Te-chao		Paris
Botany	Chien Chung-shu		Harvard
		Wu Cheng-i	China
		Tang Pei-sung	John Hopkins Univ.
		Chang Chao-chien	China
Biochemistry	Wang Ying-lai		Cambridge Univ.
Biophysics	Pai Shih-chang		Germany
Exp. Biology	Chuang Hsiao-hui		?
Entomology	Chen Shi h-hsiang		Paris
		Tsai Pang-hua	Japan
		Chao Hsing-san	?
		Chu Hung-fu	Univ. of Illinois
Genetics	Ten Te-ming		?
Hydrobiology	Wang Chia-chi		Univ. of Penn.
		Wu Hsien-wen	Paris

Institutes	Director	Deputies	Education
Microbiology	Tang Hsin-fang		?
Oceanography	Tung Ti-chen		Brussels
		Tseng Chen-kwei	Univ. of Michigan
		Chang Hsi	France
		Sun Tzu-ping	?
Plant Physiology (Peking)	Tang Pei-sung		John Hopkins Univ.
		Lin King	?
(Shanghai)	Lo Tsung-lo		Japan
		Yin Mung-chang	?
Physiology	Feng Te-pei		Univ. of Chicago
		Tsao Tien-chin	Cambridge Univ.
Psychology	Pan Shu		Univ. Chicago
		Tsao Jih-chang	Cambridge Univ.
		Ting Chuan	Univ. Chicago
		Shang Shan-yu	?
Botany (Canton)	Chen Huan-yung		Harvard Univ.
Microbiology	Kao Shang-yin		Yale Univ.
Zoology	Liu Chiao-fei		?
Applied Mycology	Tai Fang-lan		Cornell Univ.
Botany (Nanking)	Pei Chien		Stanford Univ.
Forestry & Pedology	Chu Chi-fan		?
		Sung Ta-chuan	?
		Chang Hsien-wu	?
		Lin Shen-ngo	Paris
Geology	Han Te-feng		China
		Chang Tsung-chou	?
		Cheng Yu-chi	England

Institutes	Directors	Deputies	Education
Geophysics	Chao Chin-chang		Berlin
		Ku Kung-shu	Colorado Mines
		Wei I-ching	?
		Li Shan-pang	Cal. Inst. of Tech.
Paleontology	Chao Chin-ko		?
		Su Yen-hao	?
Pedology (Nanking)	Ma Yung-chih		China
		Li Ching-kuei	Univ. Illinois
		Hsiung I	Univ. Wisconsin
Vertebrate Paleontology	Yang Chung-chien		Germany
		Shen Yi	?
Geography	Huang Ping-wei		China
		Chou Li-sen	?
		Li Ping-shu	?
Geological Mechanics	Sun Tien-ching		?
Automation	Wu Tu-yang		?
		Pan Chun	?
Chem. Metallurgy	Yeh Chu-pei		Univ. Penn.
Civil Enginrg.	Lui Hui-hsien		Cornell Univ.
Mech Enginrg.	Chang Tso-mu		England
Ceramics	Chou Ten		Cornell Univ.
Metals	Li Hsun		England
		Ko Ting-sui	Univ. of Cal.
Metallurgy	Chou Hsin-chien		China
		Huang Pei-yuan	Mass. Inst. of Tech.
		Chang Hsing-fu	China
Petroleum	Chang Ta-yu		Germany

Institutes	Directors	Deputies	Education
Optical Instruments	Wang Ta-heng		London
		Kung Tsu-t'ung	Berlin
		Li Ming-che	U. S.
Hydrotechnical	Huang Wen-hsi		Univ. Michigan
Transportation	Yin Tzu-chia		?
Metallurgy (Shanghai)	Chan Yuan-hsi		Carnegie Inst. of Tech.
		Wu Tzu-liang	" " " "
Elec. Enginrg.	Hsia Kuang-wei		?
		Wu Hsueh-lin	Carnegie Inst. of Technology
Power	Wu Chung-hua		Mass. Inst. of Tech.

Sources: K'o-hsueh T'ung-pao (Bulletin of the Chinese Academy of Sciences), no. 7, 1955.
Jen-min Jih-pao (People's Daily), June 4, 1955 & May 31, 1957.
Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.
Yuan Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.
Union Research Institute, Who's Who in Communist China, 1966.

APPENDIX IV.

EDUCATIONAL BACKGROUND OF THE OFFICERS OF THE CHINESE ACADEMY OF MEDICAL SCIENCE AS OF 1964

Institutes	Pres. Directors Deputy Directors	Education
	Huang Chia-su	Univ. Michigan
	Hsueh Kung-tso	?
	Fang Shih-wan	China
	Lin Chiao-chih	China
Internal Medicine	Chang Hsiao-chien	John Hopkins Univ.
Nutrition	Yang En-fu	?
Obstetrics & Gynecology	Lin Chiao-chih	China
Pathology	Hu Cheng-hsiang	Harvard
Pharmaceutical	Lin Wei-ching	?
Physiology	Chang Shih-chun	?
Virology	Huang Chen-hsiang	China
Acupuncture & Maxibustion	?	
Antibiotics	Chang Wei-shen	Univ. Wisconsin
Dermatology & Venereology	Hu Chuan-kuei	Univ. Texas
Epidemiology	Chen Wen-juei	China
Blood Trans. & Mermatology	Teng Chia-tung	?
Exp. Medicine	Yang Chien	?
Oncology	Wu Huan-hsing	England

Institutes	Pres. Directors	Deputy Directors	Education
Pediatrics	Chu Fu-tang		China
		Chou Hua-kang	Univ. Minn.
Parasitic	Ho Chi		England
		Mao Shao-ch	China

Source: Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.
Yuan Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.

APPENDIX V.

EDUCATIONAL BACKGROUND OF THE OFFICERS OF THE CHINESE ACADEMY OF AGRICULTURAL SCIENCES, 1964

The Academy & Research Institutes	Pres. & Directors	Deputy Directors	Education
	Ting Ying		?
		Chen Feng-t'ung	?
		Cheng Shao-chuing	John Hopkins
		Chu Tse-min	China
		Chin Shan-po	U. S.
		Cheng Chao-hsien	China
Agricultural Economics	Wei Chen-wu		?
Agric. Mech.	Li K'o-tso		U. S.
		Lui Cheng-ping	China
		Chien Hsien-ta	Iowa State
		Wang Wan-chun	Univ. Minn.
Agric. Meteorology	Lu Chiung		Berlin
		Ling Hsiu-tsao	?
Animal Husbandry	Chen Ling-feng		China
		T'ang I-jen	Edinburg
		Hsu Chi	?
		Cheng P'i-liu	Univ. Wisc.
Cotton	Leng Che-feng		Cornell Univ.
		Hu Ching-liang	China
		Li Ching	China
Crop Breeding	Wang Shou		?
		Tsai Hsu	?
		Tsu Te-ming	?
		Po Mu-hua	?
Heredity	Wan Kuo-ting		?
Irrigation	?		
		Su Chung-sung	?

Institutes	Directors	Deputy Directors	Education
Plant Protection	Shen Chi-i		London
		Ch'en Shan-min	Univ. Minn.
		Lin Ch'uan-kuang	Cornell Univ.
		Chou Ming-tsang	" "
		Ma Ya-lou	?
Pomology	Chang Tsung-shih		?
		Chang Tzu-ming	China
Soils and Fertilizers	Kao Hui-min		?
		Chang Nai-feng	Univ. Wisc.
		Leng Chao-lin	Iowa State
		Yeh Ho-tsai	England
Tobacco	Chen Shui-tai		?
Atomic energy for Agriculture	Hsu Kuan-jen		Univ. Minn.
Olculture	Chu Ming-kai		?
Apiculture	Li Chun		?

Source: Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.
Yuan Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.

APPENDIX VI.

	United States	W. Europe	USSR	China	Japan
Cal. Inst. of Tech.	23				
California	9				
Carnegie	4				
Chicago	24				
Clark	3				
Colorado Mines	3				
Columbia	14				
Cornell	34				
Harvard	36				
Illinois	16				
Indiana	2				
Iowa State	9				
John Hopkins	7				
Mass. Inst. of Tech.	24				
Michigan	20				
Minnesota	18				
Ohio State	10				
Pennsylvania	6				
Princeton	4				
Texas	4				
Washington	4				
Wisconsin	15				
Yale	6				
Others	64				
TOTALS	354	184	13	516	13

Sources: China Institute, A Survey of Chinese Students in American Universities and Colleges in the Past Hundred Years.
Yuan Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.
Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.

APPENDIX VII.

EDUCATIONAL BACKGROUND OF THE PRESIDENTS AND VICE-PRESIDENTS OF CHINA'S SCIENTIFIC AND TECHNICAL SOCIETIES, 1965

Society	President	Vice-President	Education
Mathematics	Hua Lo-keng		Univ. of Ill.
		Su Po-ching	Tokyo
		Chen Chien-kung	Japan
		Chiang Chi-han	?
Physics	Chan Pei-yuan		Cal. Inst. of Tech.
		Chien San-chieng	France
		Shih Tu-wei	Yale Univ.
		Wang Chu-hsi	Cambridge
Chemistry	Yang Shi-hsien		Yale Univ.
		Huang Tzu-ching	Mass. Inst. of Tech.
		Chang Ta-yu	Germany
		Kao Chi-yu	Univ. of Ill.
Geology	Li Ssu-kuang		Birmingham
Paleontology	Yin Tsan-hsun		Lyons
		Lu Yen-ho	?
Oceanography	Chang Hsi		Lyons
		Jao Ching-chi	?
Meteorology	Chu K'o-chen		Harvard Univ.
		Chao Chin-chang	Berlin
		Chang Nai-chao	China
Botany	Chien Chung-shu		Harvard Univ.
		Chen Huan-yung	" "
		Lin Sheng-a	Paris
		Ching Jen-chang	Sweden
		Chang Chin-yueh	Univ. of Chicago
Plant Physiology	Lo Tsung-lo		Japan
		Tang P'ei-sung	John Hopkins
		Yin Hung-chang	Cal. Inst. of Tech.

Society	President	Vice Pres.	Education
Zoology	Pin Chih	Co	Cornell Univ.
		Cheng Yueh-tseng	Cambridge
		Lin Cheng-chao	Cornell Univ.
Psychology	Pan Shu		Chicago Univ.
		Tsoo Jih-chang	Cambridge
Geophysics	Ku Kung-hsu		Colorado Mines
		Weng Wsn-po	London
Astronomy	Chang Yu-che		Univ. Chicago
		Ch'eng Mao-len	Lyons
		Li Yen	China
		Tai Wen-sai	Cambridge
Geography	Chu K'o-chen		Harvard Univ.
		Huang Ping-wei	China
		Hou Jen-chih	England
		Li Ping-shu	China
		Jen Mei-o	England
Mechanics	Chen Hsueh-shang		Cal. Inst. of Tech.
		Wu Tu-yang	?
		Lu Chiang	?
		Chung Shih-mo	Mass. Inst. ofTech.
Metallurgy	Chou J'en		Cornell Univ.
		Liu Pin	China
		Chi Shu-liang	?
		Chang Wen-chi	London
		Yang Wei	?
Mech. Enginrg.	Wang Tao-han		?
		Lin Ting	?
		Shih Chih-jen	Mass. Inst. of Tech.
		Lin Hsien-chu	England
		Sheng Hung	Cornell Univ.
		Chiang Chi-min	Harvard Univ.

Society	President	Vice Pres.	Education
Civil Enginrg.	Mao I-sheng		Harvard Univ.
		Wang Chu-chien	Cornell Univ.
		Tan Cheng	Harvard Univ.
		Chao Tsu-kang	?
		Tao Shu-tseng	China
		Wang Ming-chi	U.S.A.
		Chang Chi-ming	?
Architecture	Yen Tzu-hsiang		?
		Liang Ssu-cheng	Harvard Univ.
		Yang Ting-pao	Univ. of Penn.
		Chao sheng	Univ. of Penn.
		Jen Po-cha	?
		Lin K'o-ming	?
Water Conservation	Chang Hun-yin		Cornell Univ.
		Jeng Chung-yun	?
		Ho Chi-jeng	?
		Ho Chih-cha	?
		Hsu Kai	Univ. of Calif.
		Chang Tzi-lin	?
Elec. Enginrg.	Cheng Min-zhang		?
		Chou Chien-nan	?
		Pao Kuo-pao	Cornell Univ.
		Chu Yin-hung	U.S.A.
Survey and Cartography	Li Ting-chen		?
		Hsia Chen-pai	Berlin
		Pei Min	?
		Chen Yung-ling	Berlin
		Chao Chih-yen	?
		Chang Kuo	?
		Tang Chun	Germany
Textile	Chen Wei-chi		?
		Chang Tang-tso	?
		Li Chen-kuang	?
		Tu Tao-lin	?
		Lei Ping-lin	?

Society	President	Vice Pres.	Education
Chem. Enginrg.	Hou Te-pang		Columbia
		Chang Chen	?
Ceramics	Chen Yun-tao		?
		Lai Chi-fang	Univ. of Pittsburg
		Yen Tung-sheng	Univ. of Illinois
		Chi Chuor	?
		Lui Ching-ho	?
Electronics	Wang Tzu-kang		?
		Lui Yin	Harvard
		Chu Wu-hua	?
		Tsai Chin-tao	?
		Ma Ta-yu	Harvard
		Lu Tsung-chen	?
		Wong Shih-kuang	?
		Sun Chen-jen	?
Shipbuilding	Chang Wen-chih		England
		Yang Chun-shen	?
		Yu Hiao-kung	?
		Chen Hsiu	?
		Yang Piao	?
Paper	Wang Hsin-yuan		?
		Chen Hsiao-lan	?
		Chen Peng-nien	?
		Yu Sun-hsun	?
Aeronautical	Shen Yuan		England
		Kuo Yung-huai	Cal. Inst. of Tech.
Coal	Chia Lin-fang		China
		Ho Chieh	Colo. School Mines
		Wang Te-tzu	China
Metallurgy	Tsin Li-sheng		?
		Chang Wen-chi	London
		Shih Sheng-tai	Univ. of Mo.
		Shen Tsen-tso	?
		Chiang Shu-chin	?

Society	President	Vice Pres.	Education
Navigation	Yu Mei		China
		Ma Kuan-san	?
		Li Ching	China
		Chou Hou-hsin	?
Refrigeration	Kao Hsiu		?
		Han Te-an	?
		Tao Chu	?
		Ma Ki-ching	?
		Wang Oh	?
Agronomy	Chin Shan-pao		U.S.A.
		Yang Ki-chu	?
		Hu Chin-liang	?
		Tai Sun-an	Cornell Univ.
		Tsai Hsu	?
		Ho Kung	?
Animal Husbandry	Chen Shao-hei		John Hopkins
		Lo Ching-sheng	Univ. of Kansas
		Hsiung Ta-shih	?
		Ma Wen-tien	?
		Chang Sheng-san	China
Horticulture	Wang Keng-shen		China
		Yu Ting-tzu	?
		Chang Tzu-min	China
		Yu Te-chun	Edinburg
		Sheng Chun	?
Plant Protection	Tai Fang-lan		Cornell Univ.
		Chiu Wei-fan	Univ. of Wisc.
		Yu Tu-fu	Iowa State Univ.
		Sheng Chi-yi	?
		Tsai Pang-hua	?
		Chao Shan-huan	?
Silk	Chang Pi-ching		?
		Ku Ching-hung	?
		(and 5 others)	
Tea	Chiang Yu-shen		?
		Wang Chih-nung	?

Society	President	Vice Pres.	Education
Agricultural Machines	Lin Hsien-chou		England
		Tang Yu-chang	China
		Wang Wen-chun	Univ. of Minn.
Pedology	Li Kuang-kui		?
Forestry	Li Hsiang-fu		?
		Cheng Wan-chun	France
		Chu Chi-fan	?
Entomology	Chen Shih-hsiang		Paris
Aquatic Products	Yang Fu-ching		?
		Chu Yuan-ting	Univ. of Mich.
		Wu Hsien-wen	Paris
Physiology	Tsui-Chiang		?
		Chao J-pin	Univ. of Chicago
		Chou Chin-huang	?
Microbiology	Yu Ho		?
		Fang Hsin-fang	China
		Wei Hsi	Harvard Univ.
		Kao Shan-yin	Yale Univ.
Anatomy	Chang Yun	?	?
		Wu Ju-kang	Wash. Univ.
Pharmacology	Lung Tsai-yun		?
		Li Wei-chen	?
		Meng Mu-ti	?
Medicine	Ju Lien-chang		?
		Chien Hsin-chung	?
		(16 members; none from U. S.)	

Sources: Ten-min Shang-tse (People's Handbook), 1965, pp. 137-140.
Yuan Tung-li, A Guide to Doctoral Dissertations by Chinese Students in America, 1905-1960.
Cheng Chu-yuan, Scientific and Engineering Manpower in Communist China, 1949-1963.